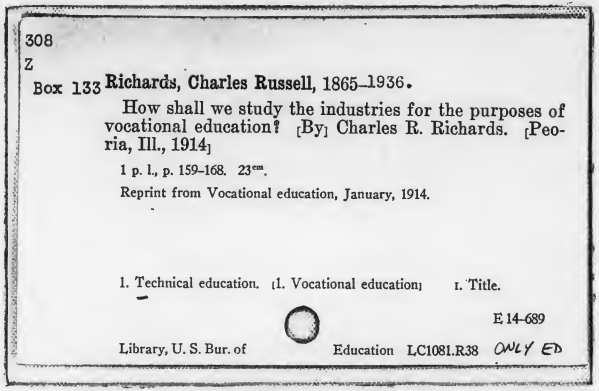
97-84150-26

Richards, Charles Russell

How shall we study the industries for the...

[Peoria, Ill.]

[1914]



308
Z
Box 133 **Richards, Charles Russell, 1865–1936.**

How shall we study the industries for the purposes of vocational education? [By] Charles R. Richards. [Peoria, Ill., 1914]

1 p. l., p. 159–168. 23cm.

Reprint from Vocational education, January, 1914.

1. Technical education. [1. Vocational education] I. Title.

E 14-689

Library, U. S. Bur. of Education LC1081.R38 ONLY ED

HOW SHALL WE STUDY THE INDUSTRIES FOR THE PURPOSES OF VOCATIONAL EDUCATION?

CHARLES R. RICHARDS

Reprint from VOCATIONAL EDUCATION, January, 1914

HOW SHALL WE STUDY THE INDUSTRIES FOR THE PURPOSES OF VOCATIONAL EDUCATION?

CHARLES R. RICHARDS.

WE have had of late years a large number of investigations or surveys which have had for their purpose the development of data upon which to formulate measures of vocational education. The results obtained by many of these surveys have not seemed commensurate with their expense, nor perhaps, on occasions, with their pretensions. Their frequent weakness has been that the data obtained has not been of a nature capable of interpretation in definite educational terms. The present paper represents an attempt to suggest principles and lines of investigation that may be turned to immediate practical account. Its direct purpose is to formulate lines of inquiry that will enable data to be obtained by which the value of vocational instruction to a community or an industry may, with some accuracy, be determined.

If we analyze the relations of education to industrial workers, we find three possible ways in which the welfare of such workers may be promoted thru training or instruction.

A. Their industrial efficiency may be improved either as regards skill or technical knowledge.

B. Their general education may be extended.

C. Opportunities for physical and mental recreation and stimulation may be presented whereby the monotony of automatic tasks may be relieved and the narrowing or cramping influences surrounding the daily work neutralized.

It is conceivable that all three of these forms of improvement might be of service in a given industry, but as a general thing we would find some one of these elements standing out as the important need.

It is evident that only the first of these divisions constitutes the field, in any strict sense, of vocational education. The other two lines may be equally valuable and important to the well-being of the workers under certain conditions, but they do not constitute in a strict sense vocational education. The second is concerned with the extension of general education. This may happen under many conditions to be the most needed and helpful influence that education can bring to bear. The third relates to numbers of factory and mill trades where the conditions are such that a combination of physically recreative and mentally stimulating experiences may be the most important benefit that can be brought into the lives of young workers.

Before beginning any survey destined to develop a program of vocational instruction, it is evident that substantial indications should be present pointing to educational opportunities along division "A". Such evidence should indicate first of all that there is large need in the industries of the community under consideration for further skill or technical knowledge that cannot be entirely supplied in commercial practice, and furthermore, that this need is worth supplying. To be specific we should know whether considerable difficulty exists in obtaining efficient workers, and whether the industries represented are of sufficiently high grade and stable character as to afford employment that insures a fair standard of living. Besides these facts we should know certain things as to the general industrial situation in the community, such as the proportion of industrial workers to the total population; the economic status of the community and its social attitude towards industrial work; the situation as regards variety and concentration of industries; racial traditions as regards the use of the child as an income asset; the habit of the community in regard to the use of educational opportunities; whether the industries concerned represent on the whole healthful occupations; whether they represent on the whole industries that from the civic and social standpoint are desirable to encourage.

THE PRELIMINARY SURVEY.

To secure such an outlook might in cases require a preliminary survey. If so the methods and conclusions of such an inquiry should be based upon its particular purpose and should be thoroly distinctive in methods and conclusions from investigations of the type to be hereafter considered, that aim to develop data which can be used as a basis of a constructive program.

As a result of such a preliminary outlook upon the situation, we should be able to determine roughly, but with some accuracy, whether the prospects for the introduction of vocational education of real benefit to the community are such as to justify an intimate investigation of the industries.

Before attempting to formulate the lines of such an inquiry, it may be well to point out that the propositions submitted are based upon the assumption that our main progress in vocational education is to be made by adapting instruction to the specific needs of different industries rather than by setting up general types of vocational instruction and inviting workers or would-be workers to partake thereof. This leads directly to the conclusion that an investigation that aims at direct constructive results from the educational side, should address itself to the study of each of the important industries or types of industry represented in the community.

The first effort of such an investigation would then endeavor to ascertain whether the industrial efficiency of those engaged in any industry, or those intending to enter the industry, may be improved either as regards skill or technical knowledge. In order to develop the lines of such an inquiry, the following analysis may be of service.

In general there are two aspects to every industry. (*a*) The purely manipulative side, that is, skill or dexterity which may be denoted by S, and (*b*), the technical side consisting of knowledge or information, which may be called T. By such knowledge or information is meant such subjects as drawing, properties of materials, shop calculations, trade processes, scientific principles that underlie trade methods, etc. The efficiency of a worker as far as it relates to teachable quantities is dependent on a combination of these two elements, and may be expressed by the equation E=S+T. Of course efficiency means a number of other things besides skill and technical knowledge. A thoroly efficient worker must possess in addition at least carefulness, faithfulness, willingness, thoroness, and soberness, but these things are general qualities of character and temperament and are not directly teachable.

Different industries vary greatly as to the amount of these two elements needed to secure efficiency. The following different cases and intermediate conditions stand out:

(A). Both skill and knowledge are needed.
(B). Skill is needed but no technical knowledge.
(C). Technical knowledge is needed but not skill.

(D). Neither skill nor technical knowledge is needed except in a very low degree.

Not only does the need for the two elements vary greatly in different industries, but the opportunities for acquiring either or both of these elements in commercial practice are a matter of great variation. Under (A) we may have three sets of conditions:

1. Where the worker can obtain both skill and requisite technical knowledge in regular employment.
2. Where he can acquire skill but not technical knowledge.
3. Where he can obtain technical knowledge but not skill.

Under (B) there are represented two cases:

1. Where the learner can obtain skill in regular practice.
2. Where he cannot.

Under (C) likewise there are two typical conditions:

1. Conditions under which technical knowledge can be acquired.
2. Conditions under which it cannot be obtained.

These cases as above noted represent extreme conditions, between which there are to be found intermediate stages.

LINES ALONG WHICH INQUIRY SHOULD DEVELOP.

From this analysis follows the first line of the proposed inquiry.

1. *Need for skill or technical knowledge.*

If conditions vary, answers should be obtained for each important department.

a. Is skill or technical knowledge or both needed for efficiency and progress in the industry.

b. Can skill be obtained in whole or in part under conditions of regular employment.

c. Can the technical knowledge required be so obtained.

By the answers to these three questions we should be able to determine pretty conclusively whether vocational education has any real function in connection with a given industry, and to determine what the general lines of such an education should be. For example, cases would be found where both skill and technical knowledge are needed in the industry. It will also be found, however, that in many of these cases under common conditions, the requisite skill may be obtained in practical work, but that the technical knowledge required for progress and full efficiency is not readily obtained. Such returns would indicate that in these industries organized school instruction along technical lines may be of service.

Again cases would develop where skill represents the important element in efficiency and where technical knowledge is of small account. Under such cases might occur instances where the requisite skill cannot be obtained under conditions of actual practice. Here again is indicated a case where the school may have a possible place in this instance for training on the manipulative side.

The indications from these questions can be readily illustrated by a number of concrete cases.

From thirteen machine-shops, among which were a number of repair shops, the following uniform replies were received:

a. Both. *b.* Yes. *c.* No.

In the case of these shops, a need for technical instruction not provided in these particular shops, is apparent.

In the case, however, of certain manufacturing machine industries where a uniform product is made, and automatic machinery and extreme division of labor carried to the extreme, it is evident that the answers would inevitably be as follows:

a. Small amount of skill. *b.* Yes.

In such a case, as far as the direct or immediate needs of the workers in the establishment are concerned, there is no indicated need for outside schooling. Whether it is desirable to provide limited school opportunities for small self-selected groups, who may wish to prepare for foremen's positions, or for entrance into establishments of another kind, is a question that can be answered only by intimate knowledge of particular conditions.

Returns from the furniture factories of Grand Rapids reveal conditions very similar to the above. From a number of factories the answers are as follows:

a. Both. *b.* Partly. *c.* No.

From one factory where a very specialized product is made, the answers were:

a. Both in a small degree. *b.* Yes. *c.* Yes.

From several book and job printing establishments, the following replies relating to compositors were received:

a. Both. *b.* Partly. To a large extent. Yes. *c.* No.

The question is raised here whether additional facilities for training in skill are needed for compositors. The need for additional technical knowledge is indicated in all replies. Technical instruction in this case might include the various sizes and kinds of type, appropriate use

of the same, size of margins, arrangements of headings and other questions involved in composition.

Four replies were obtained from master-plumbers, as follows:

a. Both. *b.* No. *c.* No.

These replies would seem to indicate that in the locality where the establishments were situated, provisions for training, both in hand skill and technical knowledge, are needed.

From a number of cotton mills the replies below, which relate to weavers, were received:

a. Skill only. *b.* Yes.

On the other hand the following answer was returned as regards loom fixers:

a. Both. *b.* No. *c.* No.

The two sets of returns indicate that while no apparent demand for special training exists for the large majority of operatives, there is a need for additional facilities for the training for the superior positions.

From a number of returns from firms making shirtwaists, the following type reply is condensed.

a. Skill only. *b.* Not wholly for higher grades.

From a manufacturer of men's clothing, the replies are:

a. Skill only. *b.* Yes.

To further determine the exact type of school best fitted to supply the needed instruction, the following lines of inquiry are desirable:

2. What are the opportunities represented by the industry?

a. The relative number of persons employed in the upper and in the lower stages of the industry.

b. The average wages in the upper and in the lower grades.

c. Proportion of new employes each year as compared to the total number of employes.

d. Is the industry intermittent or steady?

3. In what ways is the industry recruited?

a. Is difficulty experienced in obtaining efficient workers?

b. Is difficulty experienced in obtaining efficient foremen?

c. How are high grade workers recruited, by promotions from below or by direct employment?

d. Are untrained beginners wanted by employers?

e. Different ways in which beginners enter the occupation.

f. Average age at which beginners enter the occupation. Preferred age from employers' standpoint.

g. Percentage (as related to total number of employes) of those between fourteen and sixteen years of age entering during one year.

h. Percentage of those between sixteen and eighteen years of age entering during one year.

i. Average amount of general school training represented by beginners.

j. Average wages paid beginners during first two years.

k. Percentage of beginners leaving in the space of one year.

l. Percentage remaining in low paid work at end of six years.

m. Percentage advanced to skilled or responsible work at higher wages at end of six years.

4 In what ways do workers obtain training?

a. Have all beginners opportunities to learn more than one operation or kind of work?

b. The different kinds of work or departments represented in the industry.

c. Are there opportunities later on for those showing ability to change from one department to another?

d. Is the occupation open at the top for all beginners with requisite ability?

e. Does the worker receive any instruction or training from the employer?

f. Can the work be acquired with little or no instruction?

g. Is there an apprenticeship system?

h. What percentage of all young beginners are apprenticed?

5. What are the qualities demanded in a worker?

Is strength, endurance, intelligence, quickness, accuracy, dexterity, carefulness or artistic feeling needed?

6. What are the conditions under which the work is performed?

a. Does the work involve any peculiar physical or nervous strain, or present peculiarly unhealthy conditions?

b. Are the nature and conditions of the work such as to stimulate the intelligence of workers, or such as to narrow and restrict their growth?

c. Are the influences surrounding the work morally deteriorating?

7. Relations of occupation to school training.

a. Is the industry hampered by any lack of knowledge or training on the part of beginners?

b. Is general school training beyond the "working paper" grade of value for success in the occupation?

c. Is general school training beyond graduation from grammar school of advantage?

d. Is a complete high school education of advantage?

e. Is industrial school training in any form an advantage?

f. If either general or vocational training is an important advantage, just what kind of training is most necessary for efficiency? (1) General knowledge; (2) Industrial and economic intelligence; (3) Specialized technical knowledge; (4) Manipulative skill.

g. Would such instruction be most helpful if obtained before entrance upon the occupation or after?

h. Would the manipulative skill, industrial intelligence, and technical knowledge that may be acquired by pupils from fourteen to sixteen years of age in an all-day school, be a substantial asset in giving added chances of employment and of advancement?

As a result of the above lines of investigation, it should be possible to determine first of all whether the situation in the particular industry is such as to make school instruction in some form desirable from the standpoint of added efficiency, that is, whether the industry requires some form of skill or technical knowledge that is not readily or satisfactorily obtained under conditions of regular work.

Secondly, granted the above need is indicated, these lines of inquiry should allow us to determine whether the industry represents economic, sanitary, and other conditions that justify the community in providing means to assist its workers.

Thirdly, they should indicate with some degree of definiteness what type of vocational school work is best adapted for serving the industry, that is, whether an all-day industrial school or trade school dealing with pupils before entrance into the industry, or part-time day classes, or evening classes, is needed, and to what kind of subject matter such classes should address themselves.

Finally, if it is desired, we should be able to ascertain in cases where vocational instruction is not an indicated need, whether general school instruction or social welfare work is an important need of the worker.

APPLICATION TO TYPICAL CASES.

To illustrate the way in which such data might be interpreted in terms of a constructive program, let us examine two or three typical cases.

END OF
TITLE